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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,431	09/30/2003	Patrick A. Coico	FIS920030192US1	2430

29505 7590 07/25/2007
LAW OFFICE OF DELIO & PETERSON, LLC.
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EXAMINER

KORNAKOV, MIKHAIL

ART UNIT	PAPER NUMBER
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1746

MAIL DATE	DELIVERY MODE
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.07/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/605,431	Applicant(s) COICO ET AL.	
	Examiner Michael Kornakov	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6, 7 and 9-27 is/are pending in the application.
- 4a) Of the above claim(s) 15-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7 and 9-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicants' amendment dated 5/10/2007 is acknowledged. Claims 1, 6, 7, 12, 13 are amended. Claims 1-4, 6, 7, 9-27 are pending. Claims 15-27 are withdrawn. Claims 1-4, 6, 7, 9-14 are examined on the merits.

Specification

2. The disclosure stands objected to because of the following informalities: paragraphs 0019 and 0045 recite "soluble salt, such as KOH". Apparently, the recitation "salt" is not a proper term for KOH, since by definition the salt is "a compound, that results from replacement of the acid hydrogen of an acid by a metal or a group acting like a metal" (Merriam-Webster's Collegiate Dictionary, tenth edition, page 1032).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 13 (as currently amended) is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the **solvent** being ".... water, methanol, ethanol, propanol, isopropanol, tert-butyl alcohol, dimethyl sulfoxide (DMSO), acetonitrile, dimethylformamide (DMF), nitromethane, hexamethyl phosphoramide (HMPA), acetone, cyclohexanone, pyridine or combinations thereof", as recited in (0019 of specification), to dissolve all recited "salts" as claimed and disclosed

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by applicant, does not reasonably provide enablement for "aliphatic hydrocarbons, aromatic hydrocarbons, naphthenic hydrocarbons and combinations thereof" as per claim 13, to dissolve such "salts". It is established in the art that salts are being ionic compounds. It is also well established in the art that ionic (polar) compounds can be dissolved in polar solvents. The solvents recited in claim 13 are NOT polar solvents.

Claim Objections

5. Claim 12 is objected to because of the following informalities: claim 12 recites "soluble salt...consisting of KOH". Apparently, the recitation "salt" is not a proper term for KOH, since by definition the salt is "a compound, that results from replacement of the acid hydrogen of an acid by a metal or a group acting like a metal" (Merriam-Webster's Collegiate Dictionary, tenth edition, page 1032). Obviously, the other compounds recited in claims, such as TEAH, TBAH, TMAH are not salts either. It is also noted that 1,4-dioxane, listed in brackets in claim 12, as a fluorosurfactant is not the fluorosurfactant, simply because 1,4-dioxane does not contain any fluorine atoms. Claim 12 also recites "said surfactant selected from the group consisting of...an organic surfactant", which is not readily ascertainable.

6. Applicants are advised to amend the specification and claims to better reflect what applicants intend to claim as the invention. If the application becomes a patent, it becomes prior art against subsequent applications. Therefore, it is important for later

search purposes to have the patentee employ **art recognized and accepted terminology**, particularly for searching text-searchable databases.

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-4, 6, 7, 9 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Stephanie et al (U.S. 5,891,257).

As previously noted, the amended claim 1 that recites previous limitations of claim 5 is interpreted as a repetition of steps of applying the depolymerizing solution twice; at the beginning of the process, and at the end to remove the residual polymer that has not been removed for the first time.

Stephanie discloses a system and method for removing protective polymer sealant from the circuit board assembly (abstract, col.2, lines 35-40). The method comprising providing a component (substrate) that has a thermoset polymer sealant on its surface (col.2, lines 45-48), then the thermoset polymer (encapsulant) is visually detected, and the solution that dissolves (depolymerizes) the encapsulant either by hydrolysis or by transesterification is applied (col.2, lines 54-65, Fig.1, col.8, lines 31-46, claim 19), thereby removing the degraded part of the encapsulant from the intended portion of the surface. With regard to a confinement of the specific areas on the surface that should not be subjected to depolymerizing solution, see col.2, lines 54-65.

According to Stephanie, the depolymerization solution comprises a salt solution (please,

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note that aluminum chloride and stannic chloride, taught in col.8, line 55 **ARE salts**, since they contain a cation and an anion). See also col.5, lines 65-67, col.6, lines 1-6; col.8, lines 45-55, col.9, lines 1-15 and surfactant (col. 9, lines 26, 27). With specific regard to claims 3, Stephanie provides the confinement means, which is the cylindrical portion 23 of the support 22, which functions to isolate a specific device on the circuit assembly which to be contacted with the leaving the other parts intact. Further the narrow diameter of the upper portion 23 functions to focus the solvent flow onto the specific intended device of the circuit assembly (Fig.3, col.4, lines 18-24). Since the flow of solvent is precluded to contact with some of the features, the protection of the above features including electrically active features is inherent (see especially col.8, lines 38-40)

With regard to heating substrate having the residual polymer after the first step of removal, Stephanie does not specifically teach this step, however, in the operation described by Fig.2B, Stephanie provides a fixture 40 that is used to warm the solvent and the **system** (including substrate), thus motivating to use the elevated temperature to ease the removal process. It is also well known that any interaction of a polymer with solvent is enhanced by heating either one of the solvent or substrate on which the polymer is adhered. As such it would have been obvious to those skilled in the art at the time the invention was made to heat the surface having the polymer before repeating the step of applying the solvent on the substrate in order to facilitate the reaction between the polymer and the solvent and thus to enhance the removal process. It is

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also obvious to repeat the application of the solvent as many times as needed in order to achieve better removal of the polymer.

With regard to claim 6, see col.9, lines 40-50 (the table). With regard to claims 7 and 8, the system and method of Stephanie allow the solvent to remain on the surface of the substrate for the time of 5-15 minutes (see table in lines 40-50 of col.9); the stream of the solvent from the nozzle rinses off the sealant from the surface of the substrate, and the cleaned substrate is removed from the system (see col.10, lines 25-40). Since the system is heated up to the operating temperature of the solvent and remains heated with the substrate after the solvent was applied, the substrate is inherently dried under such conditions. With regard to claim 9, the claim provides no material difference between "pre-drying" and "complete drying" therefore, both steps are considered as a part of drying the substrate at the working temperature of the solvent.

8. Claims 1, 7, 9, 10, 11, 14 are rejected under 35 U.S.C. 103 (a) as being obvious over Sachdev (U.S. 2002/0000239).

Sachdev discloses a stripping method for reworking electronic components, wherein the elastomeric silicone adhesive can be removed from electronic components by a solution comprising **0.05-0.5% of a non-ionic surfactant, 0.5-5% of tetralkylammonium hydroxide** (reads on TEAH as disclosed in Applicants' claim 12) and a **solvent**, wherein the solution causes the disintegration of a polymer [0053]. Since the thermoset polymers are only named broadly by Applicant in [0031] of the instant specification, as polysiloxanes, and since Sachdev discloses specific polysiloxanes in [0006], the polymers of Sachdev ARE thermoset polymers in the sense of In re Spada

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15 USPQ2nd 1655 (Fed.Cir. 1990), stating that the same compounds cannot have mutually exclusive properties. With regard to removing a bulk polymer and removing a residual polymer, these steps are interpreted as a repetition of steps of applying the depolymerizing solution, which would be obvious to perform by one skilled in the art if the residual polymer is detected upon cleaning procedure in the teaching of Suchdev.

After treating the electronic module with the ***tetraalkyl ammonium hydroxide containing stripping solution***, the component or part is immediately (preferably within less than 15 minutes, more preferably within less than 5 minutes) rinsed preferably by spray rinse with deionized water, and preferably dried with an inert gas such as nitrogen [0062].

With regard to instantly amended claim 7, that now recites the time of cleaning, it is noted that "about 25 minutes", as instantly claimed permits some tolerance, and therefore, the time disclosed by Sachdev for the cleaning "about 30 minutes" is close and is therefore obvious, since it is settled by the Court that a prima facie case of obviousness exists when the claimed range and the prior art range do not overlap, but are close enough such that one skilled in the art would have expected them to have the same properties, Titanium Metals Corp. v. Banner, 778 F.2d 775,783,227 USPQ 773,779 (Fed. Cir. 1985)

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stephanie in combination with Sachdev.

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With regard to claim 12, Sachdev discloses the method of stripping thermoset silicone containing polymer from semiconductor surfaces with the use of tetraalkylammonium hydroxides, (reads on TEAH of claim 12), solvents and non-ionic surfactants. Solvents used in Sachdev, are not specifically those recited in the instant claims. Stephanie also discloses the method of stripping thermoset adhesive from semiconductor surfaces using surfactants and salts in the specific solvents, as discussed above. Stephanie utilizes glycols (as also used by Sachdev) along with t-butyl alcohol, thus providing the motivation to use one in lieu of the other, and the use of t-butyl alcohol is obvious over the use of n-butyl alcohol, as being structural isomer, and therefore having similar functional characteristics, as per *In re Wilder*, 563 F.2d 457, 460, 195 USPQ 426, 429 (CCPA 1977).

Response to Arguments

10. Applicant's arguments filed 05/10/2007 have been fully considered but they are not persuasive.

11. Applicants argue that KOH (potassium hydroxide) is a salt, however this argument cannot be accepted, since the internet printout from Wikipedia cannot outweigh the centuries of science and the academic textbooks, as well as scientific dictionaries definitions, as well as the common knowledge of high school chemistry, that KOH is referred to class of compounds named "hydroxides".

12. Applicants' arguments with regard to Stephanie reference reside in contention that Stephanie does not disclose applying cleaning solution locally (as per instantly

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amended claim 1). In response to this it is noted that the solution according to claim 1 is applied substantially to the residual polymer. In the 103 rejection wherein the Examiner pointed out the repetition of steps, it is within the skill of those skilled in the art to apply the solution (for the second or third time) to the places where the cleaning must be done, namely to the places, where the residual polymer is located.

Applicants further argue that Stephanie does not disclose the "salt saturated solvent", but the solvent comprising acid, alcohol and optionally surfactant. With all due respect to Applicant's opinion, Examiner disagrees. The "optional" presence of a surfactant is a less preferred embodiment, however, it is well settled that the reference is not limited to the preferred embodiments *Merc & Co v. Biocraft Labs, Inc.*, 874 F.2d 804, 807, 10 USPQ 2d 1843, 1846 (Fed. Cir.) but may be relied upon for all that it would have reasonably suggested to one of ordinary skill in the art, including not only preferred embodiments, but less preferred and even non-preferred. With regard to the compounds recited by applicants as Lewis acid in Stephanie, it is noted that aluminum chloride and stannic chloride expressly disclosed by Stephanie in col. 8, line 55 are **in fact salts** (also called Lewis acids, please see attached).

In response to Applicants' argument that the salt saturated solvent is not taught by Stephanie, it is noted that:

a) Applicants' specification is inconsistent, in some places the saturated solution is recited (abstract, 0040, 0043) in some places the salt saturated organic solvent (0016, 0022), while the saturated solution has an art recognized definition, the salt saturated solvent is not necessarily interpreted as the one where no more solute can be

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dissolved. It is further noted that since the presently amended claim requires the use of the solution at a high temperature (near its boiling point), the solution becomes unsaturated as soon as the temperature applies, because the laws of chemistry teach the increase of the solubility of the salts with the increase of temperature. As such the initial saturation of the solution with salt does not impart any difference since while in use such solution becomes unsaturated.

13. With regard to Sachdev reference, Applicants' argument refers to Sachdev reference as used in anticipation, this argument is moot, since due to Applicant's amendment the Sachdev reference is now used in the obviousness rejection. However, Examiner would like to address several Applicants' argument. First, interestingly enough, Applicants argue that quaternary ammonium hydroxide of Sachdev is not a salt, but a hydroxide, however, continue to argue that potassium hydroxide, which has also OH^- anion, i.e. the similar chemical structure as ammonium hydroxide is a salt.

With regard to Applicants alleged absence of the claimed composition in Sachdev, Applicant's attention is drawn to (0053 of the reference) that recites **0.05-0.5% of a non-ionic surfactant, 0.5-5% of tetralkylammonium hydroxide** (reads on TEAH as disclosed in Applicants' claim 12, and listed by Applicant as a salt) and a **solvent**, wherein the solution causes the disintegration of a polymer [0053]. Please, note that claim 12 depends on claim 11, which depends on claim 1, therefore, the species of TEAH disclose by Sachdev anticipates the genus of the instant claim 1, and the specie of the instant claim 12. Applicants' arguments with regard to the time of cleaning are reflected in the explanation in the body of rejection.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

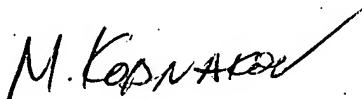
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael Kornakov
Primary Examiner
Art Unit 1746

07/22/2007